Original article

Psychological factors associated with recurrent vaginal candidiasis: a preliminary study

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Objective: To identify psychological factors associated with chronic recurrent vaginal candidiasis.
Design: A cross sectional exploratory study of women with chronic, recurrent vaginal candidiasis.
Patients: 28 women found culture positive and treated for vaginal candidiasis by a clinic physician at least twice within the past 6 months. All women reported that they had experienced vaginal thrush six or more times within 1 year. A comparison group comprised 16 women with no history of recurrent vaginal candidiasis, of similar age range, and recruited from a women's family planning service.
Methods: Both groups were compared on demographic criteria, sexual health histories, mental health, and psychological health characteristics. A purpose designed structured interview was administered alongside a battery of standardised psychometric instruments measuring mood, satisfaction with life, self esteem, and perceived stress.
Results: The two groups showed considerable similarities, with no significant differences in demographic characteristics and most sexual health issues. However, women with recurrent vaginal candidiasis were significantly more likely to suffer clinical depression, to be less satisfied with life, to have poorer self esteem, and to perceive their lives as more stressful. Additionally, women with recurrent vaginal candidiasis reported that their candidiasis seriously interfered with their sexual and emotional relationships.
Conclusions: Overall, this study identified many areas of psychological morbidity associated with chronic vaginal candidiasis, and indicates that development of appropriate psychological treatment initiatives in this area is long overdue.
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Keywords: vaginal candidiasis; psychological factors; mood

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Introduction

Vaginal candidiasis is seen predominantly in women of childbearing age, and frequently in the absence of obvious predisposing factors. It has been estimated[1] that approximately 75% of all women will experience at least one episode of vaginal candidiasis during their lifetime, and that approximately 40–50% of these will experience one further episode.[2] A small subgroup of women suffer from repeated, recurrent, often intractable episodes,[3] although there are no accurate figures with regard to the size of the group with recurrent infection. The major factors that predispose to candida infection include pregnancy,[4 5] oral contraceptives,[6] diabetes mellitus,[7] antibiotics,[6 8] and HIV infection.[9 10] Using tight, restrictive, poorly ventilated clothing and nylon underclothing,[2 7] douching,[11] using tampons rather than sanitary towels, and oral sex[12] are among other factors cited as encouraging development of vaginal candidiasis, although it is unclear if any of these factors are responsible for chronic recurrences. There is also evidence for contributory psychological problems.[13 14]

Although vaginal candidiasis may be regarded as a minor condition in that it is transitory and its physical effects are not seriously damaging, many authors report that recurrent vaginal candidiasis can result in "significant morbidity", serious social consequences and profoundly distressing deterioration in quality of life, including sexual functioning and emotional relationships.[3 15–18] This may lead to excessive demands on the healthcare system, and if the woman's perception of the illness is not appreciated by the medical practitioner this can add a further frustrating dimension to the clinical problem.[19 20]

Given the potential and reported impact of chronic vaginal candidiasis on psychosocial functioning, the present study therefore aimed to provide the first qualitative and quantitative investigation of the psychological correlates of recurrent vaginal candidiasis in the hope that, with clearer characterisation, appropriate models of psychological treatment can eventually be developed and tested.

Methods

STUDY DESIGN

The study was a cross sectional exploratory study with the following features:

(1) Participants completed a self administered questionnaire and underwent a structured interview which allowed them to give their own accounts of their illness experience.
(2) The study used the following reliable and valid psychological rating scales widely used in clinical and in sexual health survey research:
- The Hospital Anxiety and Depression Scale (HADS)[21]—a 14 item scale developed to provide a brief state measure of severity of both anxiety and depression in medical outpatient clinics, without

Table 1 Demographic characteristics of clinical and control groups

Characteristic	*Clinical sample (n=28)*	*Comparison sample (n=16)*	χ^2	*df*	*p Value*
Mean age (years) (range)	29 (19–41)	32 (23–44)	—	—	—
Ethnic status*:					
White, UK	13 (46%)	10 (63%)	1.63	2	ns
White, non-UK	3 (11%)	4 (25%)			
African/Caribbean	4 (14%)	1 (6%)			
Asian	2 (7%)	1 (6%)			
Education:					
GCSE/O levels	3 (11%)	1 (6%)	0.28	2	ns
A levels/college	6 (21%)	4 (25%)			
University	19 (68%)	11 (69%)			
Social class:					
Professional	8 (29%)	1 (6%)	4.8	2	ns
Managerial	12 (42%)	12 (75%)			
Skilled	8 (29%)	3 (19%)			
Marital status:					
Single	17 (61%)	8 (50%)	0.48	2	ns
Co-habiting	4 (14%)	3 (19%)			
Married	7 (25%)	5 (31%)			
Children:					
Yes	3 (11%)	2 (12%)	0.03	1	ns
No	25 (89%)	14 (88%)			
Employed:					
Yes	24 (86%)	14 (88%)	0.03	1	ns
No	4 (14%)	2 (12%)			

*Not all ethnic data were available in the clinical sample.

being prone to scores reflecting concurrent physical symptomatology

- The Satisfaction with Life Scale (SWLS)[22]—a five item, unitary factor self report measure of the judgmental component of life which adds item ratings to obtain a total score reflecting life satisfaction
- The Rosenberg Self Esteem Scale (RSE)[23]—a 10 item measure providing summed scores reflecting level of self worth, defined as a personal resource which may moderate the effects of threatening events
- The Perceived Stress Scale[24]—a 14 item scale used to measure the degree to which 14 situations occurring within a 4 week period in one's life are appraised as stressful.

(3) The study had a two independent samples design. A comparison group of women who did not suffer with recurrent vaginal candidiasis was recruited from a service dealing with family planning, enabling comparisons between the two independent groups.

SELECTION METHODS

The clinical sample was drawn from a population of women between the ages of 18 and 45 years. All women in the clinical sample were attending the Mortimer Market Centre or Archway Clinic for Sexual Health where they had been found to be culture positive and treated for vaginal candidiasis by a clinic physician at least twice within the past 6 months. All women reported that they had experienced vaginal thrush six or more times within 1 year.

The comparison group within the same age range was recruited from the Margaret Pyke Family Planning Service, where they attended for contraceptive advice, in order to represent women from a general population, not concerned about STD infections. Comparisons were eligible if they had experienced vaginal thrush on no more than two occasions, if they had not experienced thrush within the past 12 months and, in order to exclude other confounding genitourinary infections, if they had no recent nor chronic sexual health problems.

PROCESS OF RECRUITMENT

An information sheet and consent form were presented to participants, outlining the main research aims. Anonymity and confidentiality were guaranteed. The research was approved by the Camden and Islington CHS NHS Trust research ethics committee, and all participants were required to sign the statement of consent to acknowledge that the study had been explained to their satisfaction and that they consented to participate in the research.

Identical methods of recruitment were used for both the clinical and the comparison sample. Posters publicising the study and calling for willing participants were placed in the appropriate waiting area of each clinic. For the purpose of the study two brief recruitment leaflets were designed, each of which included the aims of the study and the inclusion criteria appropriate for each group, and distributed in waiting areas of each clinic. Interested potential participants then contacted the researcher either directly or through the clinic staff. Additional potential clinical sample participants were identified through the clinic database. All women were subsequently contacted by letter inviting them to participate in the study.

A comprehensive structured interview suitable for qualitative and quantitative analysis was developed and previously piloted for the study. It comprised sections concerning demographic information; medical history and current health status (including questions on predisposing factors, previous sexual and/or mental health problems); severity of vaginal candidiasis, experiences of treatment and use of medical services; sexual relationships and sexual functioning; experiences of childbirth and contraceptives in vaginal candidiasis; and future worries or concerns about vaginal candidiasis. This report focuses on the psychosocial aspects of the study groups.

The research interviews took place in confidential, private clinical rooms, and lasted approximately 1 hour. After the interview each patient was required to complete the questionnaire battery.

Statistical analysis was carried out with the SPSS for Windows statistical software package.

Results

CHARACTERISTICS OF THE CLINICAL AND CONTROL SAMPLES

The main characteristics of the study groups are described in table 1. Overall, no significant difference could be found between clinical and comparison samples in any demographic respect. Both seemed to represent a sample of well educated, middle class, white women. They may be in a committed relationship or not, but on the whole did not have children and appeared career oriented.

CLINICAL PRESENTATION OF WOMEN WITH RECURRENT VAGINAL CANDIDIASIS

The median time since first experience of vaginal candidiasis before research was 9 years (range 1–22 years). The onset of *recurrent* thrush ranged from 1 to 14 years previously, the median being 3.5 years. Almost 40% of the clinical sample (n=11, 39.3%) reported that they had had thrush nine times or less in the past 12 months, with another six participants (21.4%) reporting 10–15 episodes, and nearly 40% (n=11, 39.3%) reported that they had had it continuously in the past 12 months. The mean duration since the last experience of vaginal candidiasis was 6.25 weeks.

PSYCHOSOCIAL CHARACTERISTICS OF VAGINAL CANDIDIASIS

Reported life changes made to improve or manage vaginal candidiasis were as follows: changes in use of toiletries—for example, soap (n=23, 82.1%); clothes (n=15, 53.6%); using alternative remedies (n=15, 53.6%); diet (n=12, 42.9%); sanitary products (n=11, 39.3%); washing detergents (n=7, 25%); contraceptives (n=7, 25%); sexual practice (n=6, 21.4%); and using salt water when bathing (n=4, 14.3%). Other life changes reported included "exercising more" and "avoiding antibiotics". The majority of the sample (n=25, 89.3%) reported that they had never taken time off work because of vaginal candidiasis. Those who had (n=3,10.7%) stated that this was "to attend clinic appointments only".

Women reported their condition made them feel: frustrated (n=20, 71.4%); dirty (n=13, 46.4%); depressed (n=12, 42.9%); worried (n=10, 35.7%); unattractive/unsexy (n=9, 32.1%); embarrassed (n=8, 28.6%); smelly (n=8, 28.6%); it was a nuisance (n=7, 25%); and isolated (n=3, 10.7%). A third of the sample commented that their vaginal candidiasis made them feel "inadequate", "unhealthy", "in pain", "unable to socialise", and "I don't want to get involved in relationships".

RELATIONSHIPS AND SEXUAL FUNCTIONING

The majority of the clinical sample (n=21, 75%) reported that they currently had a regular sexual partner. Those who did not have a regular sexual partner at present (n=7, 25%), were asked to answer questions with their last regular sexual partner in mind. Over half of the sample (n=16, 57.1%) reported that recurrent vaginal candidiasis had placed a strain on their relationship. The majority of women (n=33, 78.6%) felt that it had affected their sex life—the most common complaints were that sex made thrush worse, that sex was prevented or avoided, painful, that they worried they may infect their partner, and that sex was less satisfying. Fifteen women (53.6%) reported that they were less satisfied with sex as a result of having recurrent vaginal candidiasis.

FUTURE WORRIES AND CONCERNS

The most common future concern reported by the clinical sample was that they would find no cure (n=17, 60.7%). Additionally, women were concerned that vaginal candidiasis would continue to affect their sex life (n=15, 53.6%) or their relationship (n=13, 46.6%); that they would give their partner thrush (n=9, 32.1%) or that fertility would be compromised (n=8, 28.6%). Others worried about the side effects of medication (n=7, 25%), or that they would become tolerant to the medication (n=6, 21.4%). Discomfort in the future was another concern (n=6, 21.4%) and telling new partners about their problem worried a small number of the clinical sample (n=5, 17.9%).

MENTAL HEALTH STATUS

Half of the clinical sample (n=14, 50%) reported previous psychological problems, including depression, eating disorders, bereavement problems, and relationship difficulties. In contrast, only a quarter of the comparison sample (n=4, 25%) reported a past psychological problem, although this was not significant. Over a third of the clinical sample and a quarter of the comparison sample reported that they had received some psychological therapy or counselling, although this was not statistically significant (χ^2= 0.54, df=1, ns).

PSYCHOLOGICAL CHARACTERISTICS

The findings for participant scores on standardised measures of psychological outcome are given in table 2.

(1) *Hospital Anxiety and Depression Scale.* On both subscales, scores from 8–10 indicate possible clinical disorder, and scores of 11 or above indicate probable clinical disorder. The majority of the women with recurrent vaginal candidiasis were suffering from anxiety at a clinical level (n=20, 71.4%). Of these, 10 (35.7% overall) scored as having mild anxiety, and the rest (n=10, 35.7%) scored as suffering moderate to severe levels of clinical anxiety. On the other hand, just over four in 10 of the comparison group (n=7, 43.4%) were suffering from anxiety at a mild to moderate clinical level. A Mann–Whitney U test found no significant difference between the clinical sample and the comparisons with regard to HAD anxiety (p = 0.12).

Depression. The majority of the women with recurrent vaginal candidiasis (n=24, 85.7%) were within the range for normal levels of depression, with a small proportion revealing a clinical level of depression (n=4, 14.3%). All of the comparison samples were within the range for normal levels of depression. Those with recurrent thrush did, however, have significantly higher scores (p=0.01).

(2) *Satisfaction with Life Scale.* On this scale where the maximum score is 35 ("best possible life satisfaction") and the lowest score is 5, the median scores on the SWLS for the clinical and comparison samples were 20.0 and 26.5, respectively. This difference was significant (p=0.03), indicating the clinical sample had significantly lower levels of subjective well being than the comparisons.

(3) *Rosenberg Self Esteem Scale.* The clinical sample differed significantly from the comparisons with regard to the RSE, with median scores of 20.0 and 17.0 respectively (p = 0.02),

Table 2 Psychological outcome of the clinical and comparison samples as measured by the HAD SWLS, RSE, and PSS

	Clinical sample (n = 28)		*Comparison sample (n = 16)*		
Measure	*Median*	*Range*	*Median*	*Range*	*p Value**
HAD:					
Anxiety	9.0	1–19	6.0	0–14	0.12
Depression	4.5	1–9	2.0	0–7	0.01
SWLS	20.0	13–30	26.5	13–32	0.03
RSE	20.0	11–31	17.0	12–25	0.02
PSS	26.5	12–41	20.0	14–31	0.03

*Mann–Whitney U test.

indicating significantly lower self esteem in the clinical group.

(4) *Perceived Stress Scale*. In this scale, scores can range from 0 to 56, with higher scores indicating more perceived stress. Cases differed significantly from comparisons on the PSS, with respective median scores of 26.5 and 20.0 ($p = 0.03$). The comparisons' median score matched the normative population mean on this scale, suggesting the clinical group was indeed more stressed than the general population.

Discussion

This is the first published study specifically examining the consequences of recurrent vaginal candidiasis, but there are important methodological limitations. Firstly, the *representativeness of cases* cannot be guaranteed, as the genitourinary medicine site of recruitment and *stigma* associated with it may influence the generalisability of findings. Additionally, the study recruitment was an opt-in design, so those doing so may have had psychological difficulties motivating this, and specific motivations in choosing the particular site for treatment in preference to, say, a general practice. However, this study was not attempting to show that recurrent thrush is different from STDs, it was attempting a comparison with women in the general population. In doing so, however, there was also a risk of non-generalisability with the comparison group. Additionally, the opt-in nature of recruitment enabled no assessment of the proportion of eligible cases recruited. Nevertheless, as the first study of its type, this work represents an early opportunity to identify appropriate variables for future psychological research in this area. An additional limitation is the *small sample sizes*. For example, we cannot be confident over the likely absence of group demographic differences—larger numbers would be desirable, in particular for detection of differences in ethnicity which may influence patient psychological perspectives and strategies, and the patients' willingness to discuss them. A third limitation of this study is its *cross sectional* nature; as measures of psychological outcome were not available for the sample before the onset of their illness, or after remission, it is not possible to determine whether the sample levels of distress observed were pre-existing or the specific result of vaginal candidiasis. The cross sectional nature of this study also leaves the contributory role of psychological problems to vaginal candidiasis open to question. Prospective or longitudinal studies would be useful to answer this. Finally, the range of variables investigated did not include other factors which may have contributed to psychological distress or vaginal candidiasis in the women, such as their levels of social support, or their locus of control. It is hoped that these can be included in future research.

Despite these shortcomings, the data in this study are suggestive of a significant psychological impact attending a condition often regarded as minor and transitory. The clinical sample reported a major impact of the condition on their everyday lives necessitating changes to clothing and regimes for personal health and hygiene. Serious impacts on emotional and sexual relationships were also reported in this group, and although there were also considerable prior psychological difficulties reported, these did not differ significantly in level from the comparison group. Nevertheless, the incidence of psychological disorder and experience of therapy observed in the clinical sample would probably exceed that expected in the normal population, and descriptions of the impact of recurrent vaginal candidiasis on emotional and sexual relationships parallel those reported in studies which have examined genital human papilloma virus[25] and herpes simplex virus.[26 27] This may lend support to claims that psychological problems may contribute to the recurrence of vaginal candidiasis.[13 14]

The study also confirms significant levels of psychological morbidity in recurrent vaginal candidiasis, as measured by standardised instruments. However, over half of the comparison sample suffered from anxiety at a clinical level and the clinical and comparison samples did not differ significantly on their overall levels of anxiety. It may be that the study attracted a group of anxious women or it may be that high achieving women as a whole report high levels of anxiety to which the experience of a recurrent vaginal infection makes little difference.

The majority of participants were well within the normal range for levels of depression. However, a small proportion of the clinical sample appeared to be clinically depressed, thus influencing the overall finding of a significant difference in depression levels between groups. This would accord with the women's reports that recurrent vaginal candidiasis made them feel depressed, although their depression could not be regarded as "clinical", and psychological interventions focusing on depression alone are not clinically justifiable in this sample.

Women with recurrent vaginal candidiasis were also significantly less satisfied with life than the comparison sample, and had significantly lower self esteem. Those in the clinical sample were also found to appraise their lives as significantly more stressful than the comparison sample and had a higher mean score than would be expected in the general population. Such higher scores are related to depressive

presentations and increased use of health services in general population samples.[24]

Further and larger studies with appropriate comparison groups are needed if we are to assess the relative contributions not only of the factors examined in this preliminary study, but of other factors which it was unable to take into account. There is also a need for longitudinal studies to examine the unfolding dynamics of candidiasis related emotional distress over time. Validated and reliable measures that are sensitive to change, and to the particular needs of women with recurrent vaginal candidiasis, will provide a greater understanding of the essential elements of appropriate psychological interventions. An evaluation of the implementation of psychological therapy with women with recurrent vaginal candidiasis, alongside current "standard" approaches to treatment—to identify the "added value" of psychological approaches to management—seems particularly justified in the light of these findings.

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